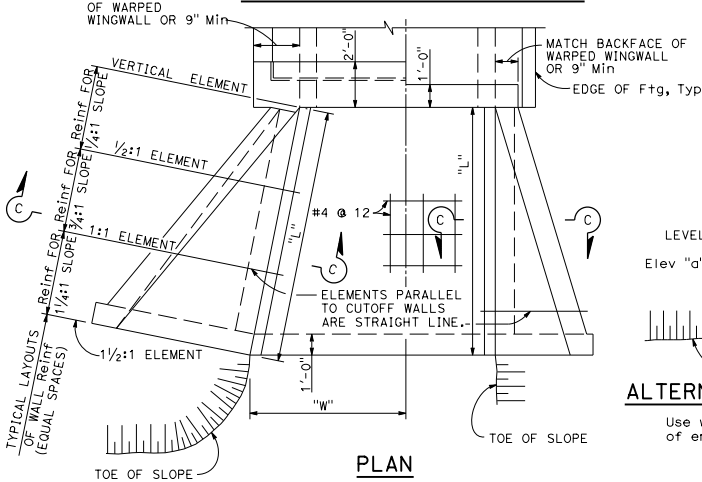
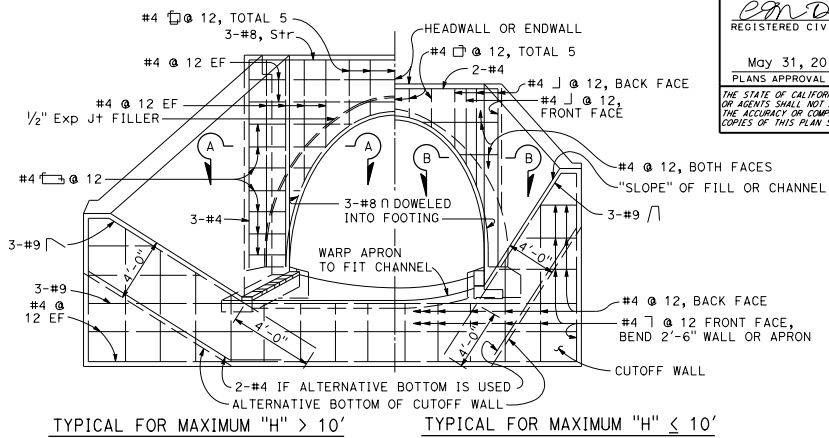


PART LONGITUDINAL SECTION

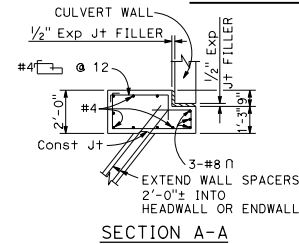


ALTERNATIVE WARPED WINGWALL

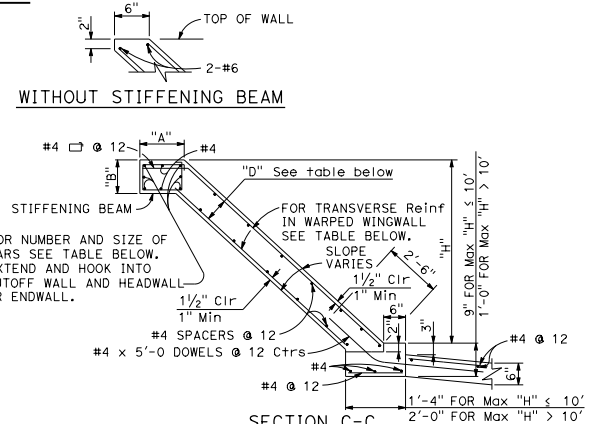
Use where additional protection to toe of embankment is required.



END ELEVATION



SECTION B-B



Where abrasion is anticipated, increase apron thickness to 7" minimum to provide 2" minimum reinforcement coverage.

WALL DIMENSIONS AND REINFORCING									
ELEMENT SLOPE	"H"	8' OR LESS	10'	12'	14'	16'	18'	20'	
1/4:1	FRONT FACE Reinf	#4 @ 12	#4 @ 7	#5 @ 7	#5 @ 5	#6 @ 6	#7 @ 7	#7 @ 6	
	REAR FACE Reinf	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	
3/4:1	FRONT FACE Reinf	#4 @ 12	#4 @ 12	#4 @ 8	#4 @ 8	#4 @ 8	#4 @ 6	#4 @ 6	
	REAR FACE Reinf	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 10	#4 @ 7	#4 @ 6	#5 @ 8	
1 1/4:1	FRONT FACE Reinf	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	
	REAR FACE Reinf	#4 @ 8	#4 @ 8	#4 @ 5	#5 @ 6	#6 @ 7	#6 @ 6	#7 @ 6	
"D" AT CUTOFF WALL	6"	6"	6"	6"	7 1/2"	8"	9 1/2"	11"	
"D" AT CULVERT	6"	6"	6"	6"	8"	9 1/2"	11"	1'-1"	

STIFFENING BEAM DIMENSIONS AND REINFORCING									
"L" MAX	12'	14'	16'	18'	20'	25'	30'	35'	40'
6'	NO BEAM. PLACE 2-#6 IN EACH FACE ALONG TOP OF WALL.								
8'	"A" = 1'-0"								
10'	"B" = 9"								
12'	"A" = 1'-6"								
14'	"B" = 1'-0"								
16'	"A" = 1'-10"								
18'	"B" = 1'-3"								
20'	"A" = 2'-2"								
	"B" = 1'-6"								
	TOTAL 6-#6								
	TOTAL 6-#7								
	TOTAL 8-#8								
	TOTAL 8-#9								

NOTES:

Walls designed for 2'-0" surcharge; earth density = 120 pcf; equivalent fluid pressure = 36 pcf.
 Vary "D" of warped wall uniformly from that at cutoff wall to that at headwall or endwall, for maximum "H" > 12'.
 Dimensions "L", "W", "H", "M", "N", Elev "a", "Angle of flare", and "Slope" (as applicable) are shown on the plans.

Dist	COUNTY	ROUTE	POST MILES	SHEET TOTAL
			TOTAL PROJECT	SHEETS

REGISTERED CIVIL ENGINEER

May 31, 2018

PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

EXP. 6-30-18

CIVIL

STATE OF CALIFORNIA

ARCH CULVERT HEADWALLS, ENDWALLS AND WARPED WINGWALLS

NO SCALE

D86C